Great Lakes Dredge & Dock Company

Contingency Plan

Lower Passaic River Study Area Project
Dredging / Solidification / Capping Services

Contingency Plan rev3			
DREDGING, STABILIZATION AND CAPPING RIVER MILE 10.9 TCRA			
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We certify that the submittal has been reviewed, checked and approved for compliance with the Contract Documents			

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1.0 Introduction

This Contingency Plan has been prepared to outlines measures to be taken if compliance threshold criteria for water quality are exceeded. This plan will also discuss triggering events, confirmatory monitoring actions, response actions, notifications, and documentation.

The plan also describes the materials and equipment that will be available to the subcontractor during the duration of this contract, such as sorbent booms, silt curtains or other equipment.

2.0 Non-compliance of Applicable Water Quality Criteria

2.1 Turbidity

Turbidity monitoring will be conducted at five (5) locations:

Buoy #1 - Downstream monitoring baseline location shall be established approximately 2,650 feet (0.5 mi/808 m) from the southern boundary of the Removal Area.

Buoy #2 - Downstream monitoring location shall be established approximately 200' (61 m) from the southern boundary of the Removal Area.

Buoy #3 - Upstream monitoring location shall be established approximately 200 feet (61 m) from the northern boundary Removal Area.

Buoy #4 - Upstream monitoring baseline location shall be established approximately 2,650 feet (0.5 mi/808 m) from the northern boundary of the Removal Area.

Buoy #5- Mobile buoy which shall be shifted as needed to continuously monitor the turbidity 50 feet (15 m) from the edge of the silt curtain surrounding the active dredging works, in the direction of the prevailing current.

2.2 Trigger and Action Level Event Criteria

The upper level turbidity criteria defined as a "Trigger Level" will be a value which exceeds the background turbidity at the removal area perimeter monitoring points (Buoys #1 or #4) by more than 35 NTU above background for four consecutive readings (i.e., 60 minutes). An event greater than 35 NTU above background is considered a "Trigger Level" and will be recorded and reported to CH2M HILL. GLDD will evaluate causes and take actions to prevent further exceedances.

An exceedance 70 NTUs above background at the removal area perimeter monitoring points (Buoys #2 or #3) for four consecutive readings (i.e., 60 minutes) will be considered an "Action Level" event and work will be suspended until the turbidity levels decrease below 70 NTU above background. Trigger and Action levels are subject to final USEPA approval of Project WQMP.

A GLDD site Engineer assigned to the project on a full time basis who is thoroughly familiar with the turbidity monitoring equipment, will be notified automatically via email when turbidity values approach Trigger or Action levels. If a notification occurs, the Engineer will monitor turbidity measurements in real-time to watch for any exceedances, or to confirm that turbidity values have returned to an acceptable level. In addition, all events will immediately reported by the Engineer to the dredging Superintendent, GLDD Project Manager and appropriate CH2M HILL personnel.

3.0 Floods, Heavy Rainfall and Storm Surge

This section provides guidelines for preventing personal injury, property damage and oil fuel spills from exposure to severe weather conditions such as hurricanes, severe thunderstorms, lightning, high winds and flooding.

Responsibility:

The Captain of the Dredge, in consultation with the Site Manager, will make a determination as to actions to be taken to protect life and property when advised of a hurricane or severe storm warning, including the evacuation of personnel from vessels.

Weather System:

- Tropical Depression: A tropical cyclone in which the maximum sustained surface wind is 33 knots or less.
- Tropical Storm: A tropical cyclone in which the maximum sustained surface wind ranges from 34 knots to 63 knots
- Tropical Storm Warning: A warning that tropical storm conditions are expected in a specified area within 24 hours or less.
- Hurricane: A tropical cyclone in which the maximum sustained surface wind is 64 knots or more.
- Hurricane Warning: A warning that sustained winds of 64 knots or higher are expected in a specified coastal area within 24 hours or less.
- Nor' easterner: An extra-tropical cyclone which generates hurricane force winds which vary in size from 100 miles to nearly 1000 miles in diameter. While these storms are usually well forecasted, they can develop with little or no warning. December through February is the heart of the storm season.
- Weather Broadcasts: The best access to up-to-date weather information is through the VHF-FM radio broadcasts by NOAA's National Weather Service. Coastal marine warnings and forecasts are issued 24 hours a day on channel WX1 or WX2. These forecasts include winds, sea heights, and weather conditions for the next 36 hours, as well as small craft advisories, gale warnings, storm warnings, and

tropical storm or hurricane warnings. Continuous taped weather transmissions are also broadcast 24 hours a day. These transmissions repeat taped messages every four to six minutes and are updated every two to three hours.

- Weather broadcasts for the Atlantic Coast: Are received primarily on the following VHF channels: WX-1 (162.559 MHz): WX-2 (162.400 MHz): and WX-3 (162.475 MHz).

Sea State Conditions: (Wind and Sea Scale for fully Arisen Sea)

Wind Description	Wind Velocity (Knots)	Avg Wave Height (Feet)
Moderate Breeze Wind speed range (11-16 knots)	12	1.4 - 2.0
Small waves, becoming longer	16	2.9
Fairly frequent white caps.		
Fresh Breeze Wind speed range (17-21 knots)	18	3.8 - 4.3
Moderate waves, taking a more	20	5.0
pronounced long form; many white		
caps are formed. (Chance of spray).		
Strong Breeze Wind speed range (22-27 knots)	22	6.4 - 7.9
Large waves begin to form; the	24.5	8.2
white foam crests are more extensive	26	9.6
everywhere. (Some spray).		
Moderate Gale Wind speed range (28-33 knots)	28	11 - 14
Sea heaps up; white foam from breaking	30.5	14
waves begins to be blown in along the	32	16
direction of the wind.		
Fresh Gale Wind speed range (34-40 knots)	34	19 - 21
Moderately high waves of greater length;	37	23
foam is blown in well-marked streaks	38	25
along the direction of the wind.	40	28
Strong Gale Wind speed range (41-47 knots)	42	31 - 36
High waves; dense streaks of foam	46	40
along the direction of the wind;		
wave crests begin to topple and roll over;		
spray may affect visibility.		

Storm	Wind speed range (48-55 knots)	48	44 - 49
Very high waves with long overhanging		51.5	52
crests. On the whole, the surface of the		52	54
sea takes a white appearance; the tumbling		54	59
of the sea becomes heavy and shock-like;			
visibility is affected.			

Procedure for Moving the Dredge to Safe Harbor:

The following contingency plan for moving the dredge is to be implemented in advance of a hurricane or severe storm arriving in the operating area:

- Forecasts of severe weather: Upon learning of the development of a hurricane or severe storm, plotting will begin as weather reports are received from the forecasting services. NOAA radio broadcasts are to be monitored along with commercial weather forecasts.

- Seventy-two hours prior to arrival of severe weather: Movable equipment, i.e., drums, cylinders, tanks, barrels, reels, spools, couplings, and the like should be securely lashed and made fast to the vessel or structure. All non-essential gear and equipment should be stowed. Priority repairs should be made immediately, and a six-hour weather watch initiated. (Weather reports, bulletins, and other pertinent weather information should be carefully checked every 6 - 12 hours).

- Twenty-four to thirty-six hours prior to arrival of severe weather: The dredge should be rigged for towing and get underway to transit to the designated safe harbor. Have all crane booms lowered to the deck or retracted to the shortest boom length to avoid damage by high winds. All attendant plant shall be dispatched to the designated safe harbor.

- After the storm has passed, all hands are to return to the worksite and assist in restoring the vessel and equipment to working order after all hands is accounted for. The vessel should be made shipshape and safe as rapidly as possible.

Lightning

High winds, rainfall, and a darkening cloud cover are the warning signs for possible cloud-to-ground lightning strikes. While many lightning casualties happen at the beginning of an approaching storm, according to the National Oceanic and Atmospheric Administration, more than 50 percent of lightning deaths occur after the thunderstorm has passed. The lightning threat diminishes after the last sound of thunder, but may persist for more than 30 minutes. When thunderstorms are in the area, but not overhead, the lightning threat can exist when skies are clear.

While nothing offers absolute safety from lightning, some actions can greatly reduce your risks. If a storm is approaching, avoid being near high places on vessels, especially near antennas. Personnel located on the dredge barge site will seek shelter in either the on-deck field office or on-deck storage container until thunderstorm and lightning activity passes. Personnel located at the dredge material processing facility will seek shelter in field offices and/or vehicles. During such events, the following activities will be strictly forbidden:

a) Cellular telephone usage
b) Showering or washing hands
c) Contact with conductive surfaces, including metal doors window frames, wiring and plumbing.

The Site Superintendent, Site Engineer and/or Project Manager will monitor weather conditions when a storm is approaching. All workers will seek shelter until the severe weather has subsided. This phase should be maintained until no lightning has been detected within 10 miles of the project for at least 15 to 30 minutes.

EMERGENCY MANAGEMENT PLAN FOR SEVERE WEATHER

In the event of impending severe weather conditions, floating plant shall be towed to the following safe harbor in accordance with the timetable outlined in the Severe Weather Plan

LOCATION OF SAFE HARBOR

GLDD Staten Island Yard

FLOOD PLAN

Although barriers may protect potential flood areas from predictable tidal or storm surges, flooding can occur at any time due to:

Prolonged or intensive rainfall
Abnormally high river levels
Major storms or tidal waves

Flood Warnings

A typical flood warning time is around 30 to 60 minutes. Sample flood warning messages are:
Flood Alert – Flooding is possible
Flood Warning – Flooding of homes, businesses and main roads is expected
Severe Flood Warning – Severe flooding may cause Imminent danger
All Clear – No Flood Alerts or Warnings are in force

Flood Planning

Discuss a plan with Project team members

Know how to disconnect and secure diesel, gas, electricity and water supplies
Know where to move dredge barge, transport barges and tugs in an emergency. This project equipment will be temporarily re-located and secured at the GLDD Staten Island office/yard
Store valuable property in a raised secure location
Clear and secure loose items on the decks.
If evacuated, you may be unable to return to you're the project site for some time

If Flooding is Imminent

Go to high ground and evacuate the site

General Health and Safety

Do not walk, drive or swim through floods.
Be aware of hidden dips in a road
Floods often contain sewage - avoid food that may have been contaminated by floodwater
Avoid wet electrical equipment
Ventilate your property as much as possible, while maintaining security
If evacuation is necessary follow police advice

4.0 Failure of Sediment Controls

The primary sediment control use during dredging and capping operations include the use of turbidity curtains and the restriction of thrusters/propulsion devices power when operating within the removal area, or when operating on the periphery and pointing toward the dredge cut.

GLDD will monitor the river velocity/curtain behavior and suspend operations should the turbidity monitoring instruments exceed the allowable prescribed parameters. Based upon the proposed layout of the turbidity barrier and passive flow rate allowance of 18 gpm/ft^2, the curtain will remain effective well within the range of recorded current flow of 1-1.2 knots. The installed curtain also demonstrates a safety factor for the allowance of storm events that will typically increase current flows. Current flow in excess of 2 knots will be considered the upper threshold level for turbidity curtain effectiveness. Should it be determined that the curtain is at risk for damage (debris collisions, strain on curtain, etc.) at this velocity, the curtain may be removed.

To prevent the failure of the turbidity curtain and ensure maximum effectiveness, the following monitoring/maintenance parameters will be employed:

Monitoring

1. The turbidity curtain shall be inspected daily and repaired or replaced immediately.
2. If the curtain is oriented in a manner that faces the prevailing winds, frequent checks of the anchorage shall be made.
3. While inspecting, look for areas where turbid water is escaping into the larger water body.

Maintenance

1. Any floating construction or natural debris shall be immediately removed to prevent damage to the curtain.
2. If the turbidity curtain is damaged that section of the turbidity curtain will be repaired or replaced.
3. An additional 100-ft of turbidity curtain and oil boom will be maintained on site for repairs.

In the event of an exceedances of 70 NTUs (or other approved action level) above background at the removal area perimeter monitoring points (Buoys #2 or #3) for four consecutive readings (i.e., 60 minutes) construction activities shall be temporarily halted until water quality parameter readings decrease to an acceptable level. During this time, the GLDD will notify CH2M HILL or CH2M Hill's representative and attempt to identify and rectify the cause of the exceedances. Trigger and Action levels are subject to final USEPA approval of Project WQMP.

A record of these exceedances will be recorded, thereby documenting the events and any corrective measures taken. The presence of turbidity and visible sheens which may originate from the area of activity (whether or not criteria limits have been or continue to be exceeded) will be immediately addressed using the accepted Best Management Practices and/or the temporary suspension of work until such a time that the origin is identified and corrected/controlled.

5.0 Differing Site Conditions

Great Lake Dredge & Dock, Co. LLC will promptly, and before the conditions are disturbed, give a written notice to CH2M HILL of:

1. Subsurface or latent physical conditions at the Site which differ materially from those indicated in this Contract.

2. Unknown or unusual physical conditions at the Site, which differ materially from those anticipated or ordinarily encountered and generally recognized as inherent to Work and character of dredged materials described in the Contract.

3. Conditions currently unforeseen that the Subcontractor becomes aware of that could, or potential could create a health and safety hazard.